Stephen R. Ash, M.D., F.A.C.P.

CURRICULUM VITAE

Personal Data

Born September 22, 1945, Kansas City, MO
Married, 2 children

Position Titles

Chairman of the Board of Directors and Medical Director
HemoCleanse, Inc. and its subsidiary, Ash Medical Systems, Inc.

Medical Director and Chief Science Officer, Renal Solutions, Inc.

Adjunct Associate Professor, Purdue University, West Lafayette, Indiana
Director, Dialysis Center for Greater Lafayette
Member and Nephrologist, Arnett Clinic, Lafayette, Indiana.

Position Responsibilities

As Chairman of the Board: Presides over all Board of Directors meetings. Member of Executive Management Committee. As Medical Director: Provides leadership and direction to all R&D activities. Serves as monitor and investigator in clinical trials of devices. Principal contact for FDA, patent office, and NIH matters.

Education

B.A., Physics, 1967, Northwestern University
M.D., Medicine, 1971, Kansas University Medical School
Postdoctoral Fellow, Physiology, 1972-73, Indiana University Medical School
Residency in Internal Medicine, 1971-74, Indiana University Medical School
Fellowship in Nephrology, 1974-75, Indiana University Medical School

Business/Research Experience

1989 to Present — HemoCleanse, Inc., West Lafayette, Indiana
Chairman of the Board of Directors; Director of Research and Development; Medical Director

HemoCleanse, Inc. was established to manufacture and market a device for the treatment of liver failure and drug overdose.

1983 to Present — Ash Medical Systems, Inc., West Lafayette, Indiana
Chairman of the Board of Directors; Director of Research and Development; Medical Director

Ash Medical Systems, Inc., a wholly owned subsidiary of HemoCleanse, Inc., was incorporated in June 1983 to develop, manufacture, and market: (1) extracorporeal blood therapy systems for the treatment of a variety of acute blood disorders and (2) improved vascular access devices for painless, bloodless, long-term vascular access.

1980 to Present — Purdue University; West Lafayette, Indiana
Adjunct Associate Professor, Comparative Medicine, Department of Veterinary Medicine

1975 to Present — Arnett Clinic; Lafayette, Indiana
Practicing physician, Internal Medicine with specialization in Nephrology

1975 to Present — St. Elizabeth Hospital Medical Center and Home Hospital; Lafayette, Indiana ("Greater Lafayette Health Services")
Director, Dialysis Services

1975 to 1983 — Purdue University; West Lafayette, Indiana
Research Associate and Director, Hemodialysis Laboratory, Institute for Interdisciplinary Engineering Studies

1971 to 1975 — Indiana University Medical Center; Indianapolis, Indiana
Nephrology Fellowship and Internal Medicine Residency

Affiliations and Honors

Alpha Omega Alpha, 1971, University of Kansas

William Bailey Award for Research in Pathology, 1971, University of Kansas

Board Certification, American Board of Internal Medicine, 1976

Board Certification, American Board of Internal Medicine, Nephrology Section, 1978

Fellow, American College of Physicians, 1981

Recipient of *Elizabethan Award*, St. Elizabeth Hospital Medical Center, Lafayette, Indiana, 1991

Listed in *The Best Doctors in American*, 1999 Edition

Member, Board of Director: ASAIO, 2000

Member, Board of Director: International Society for Apheresis, 2000

Member, Steering Committee: Society for Diagnostic and Interventional Nephrology, 2000

Member: ASAIO, AASLD, ASN, ACP, ISAO, ISPD

Outstanding Abstract Award for Best Hemodialysis Abstract, 20th Annual Convention on Dialysis, Symposium on Home Hemodialysis, February 2000

U.S. Patents

U.S. Patent No. 6,264,680. "APPARATUSES AND PROCESSES FOR WHOLE-BODY HYPERTHERMIA" by SR Ash, Assignee: ViaCirQ, Inc., July 24, 2001.

U.S. Provisional Patent Application. "CATHETER INTRODUCER HAVING AN EXPANDABLE TIP." by AB Korkor and SR Ash, filed June 2001.

U.S. Provisional Patent Application. "A CATHETER LOCK SOLUTION INCLUDING A PHOTO-OXIDANT" by SR Ash, filed May 10, 2000.

U.S. Provisional Patent Application. "USE OF MAGNETIC PARTICLES IN A FLUID FOR MIXING AND LEAD DETECTION" by F Friedlaender and S Ash, filed May 5, 2000.

U.S. Patent No. 6,042,561. "NON-INTRAVASCULAR INFUSION ACCESS DEVICE" by SR Ash and EM Janle, March 28, 2000.

U.S. Patent No. 5,947,953. "SPLITTABLE MULTIPLE CATHETER ASSEMBLY AND METHODS OF INSERTING THE SAME" by SR Ash, AJ Madison, and TM Schweikert, September 7, 1999.

U.S. Patent No. 5,919,369. "HEMOFILTRATION AND PLASMAFILTRATION DEVICES AND METHODS" by SR Ash, July 6, 1999.

U.S. Patent No. 5,906,978. "METHOD OF IRON DELIVERY TO A PATIENT BY TRANSFER FROM DIALYSATE" by SR Ash, May 25, 1999.

U.S. Patent Application 09/237,476. "SILICA-CONTAINING SORBENT SUSPENSIONS AND TREATMENTS USING SAME" by SR Ash, filed January 26, 1999.

U.S. Patent Application 60/097,777. "METHODS OF ENHANCING CATHETER PATENCY USING A CITRATE SALT CATHETER LOCK SOLUTION" by SR Ash, filed August 25, 1998.

U.S. Patent No. 5,536,412. "HEMOFILTRATION AND PLASMAFILTRATION DEVICES AND METHODS" by SR Ash, July 16, 1996.

U.S. Patent Application 09/284,904. "CONTINUOUS FLOW-THROUGH PERITONEAL DIALYSIS (CFPD) METHOD WITH CONTROL OF INTRA PERITONEAL PRESSURE" by SR Ash, filed June 28, 1999, issued Feb, 2002.

Des. 370,531. "PERITONEAL DIALYSIS CATHETER IMPLANTER" by SR Ash and JA Navis, June 4, 1996.

U.S. Patent No. 5,476,444. "SPECIALIZED PERFUSION PROTOCOL FOR WHOLE-BODY HYPERTHERMIA" by NG Keeling, SR Ash, RB Truitt, and JA Guzman, December 19, 1995.

U.S. Patent No. 5,322,519. "FOLDABLE CATHETER FOR PERITONEAL DIALYSIS" by SR Ash, June 21, 1994.

U.S. Patent No. 5,277,820. "DEVICE AND METHODS FOR EXTRACORPOREAL BLOOD TREATMENT" by SR Ash, January 11, 1994.

U.S. Patent Application. Serial No. 07/940,546, "APPARATUS FOR WHOLE BODY HYPERTHERMIA", Filed September 4,1992 and allowed on March 8, 1994.

U.S. Patent No. 5,002,054. "INTERSTITIAL FILTRATION AND COLLECTION DEVICE AND METHOD FOR LONG-TERM MONITORING OF PHYSIOLOGICAL CONSTITUENTS OF THE BODY" by SR Ash and EM Janle, March 26, 1991.

U.S. Patent No. 4,995,268. "METHOD AND APPARATUS FOR DETERMINING A RATE OF FLOW OF BLOOD FOR AN EXTRACORPOREAL BLOOD THERAPY INSTRUMENT" by SR Ash and TG Echard, February 26, 1991.

U.S. Patent No.4,914,819. "EATING UTENSIL FOR INDICATING WHEN FOOD MAY BE EATEN THEREWITH AND A METHOD FOR USING THE UTENSIL" by SR Ash, April 10, 1990.

U.S. Patent No. 4,854,322. "CAPILLARY FILTRATION AND COLLECTION DEVICE FOR LONG-TERM MONITORING OF BLOOD CONSTITUENTS" by SR Ash and EM Janle-Swain, August 8, 1989.

U.S. Patent No. 4,777,953. "CAPILLARY FILTRATION AND COLLECTION DEVICE AND METHOD FOR LONG TERM MONITORING OF BLOOD CONSTITUENTS" by SR Ash and EM Janle-Swain, October 18, 1988.

U.S. Patent No. 4,661,246. "DIALYSIS INSTRUMENT WITH DIALYSATE SIDE PUMP FOR MOVING BODY FLUIDS" by SR Ash, April 28, 1987.

U.S. Patent No. 4,581,141. "DIALYSIS MATERIAL AND METHOD FOR REMOVING UREMIC SUBSTANCES" by SR Ash, April 8, 1986.

U.S. Patent No. 4,559,039. "PERMANENTLY PLACED TRANSCUTANEOUS ACCESS DEVICE TO BLOOD VESSELS" by SR Ash and GM Kaufman, December 17, 1985.

U.S. Patent No. 4,498,902. "CATHETER GUIDE" by SR Ash, GC Wolf and R Bloch, February 12, 1985.

U.S. Patent No. 4,413,988. "SHORT-TUBING SET GRAVITY POWERED PERITONEAL CYCLER" by HE Handt and SR Ash, November 8, 1983.

U.S. Patent No. 4,403,984. "SYSTEM FOR DEMAND-BASED ADMINISTRATION OF INSULIN" by SR Ash and MP Loeb, September 13, 1983.

U.S. Patent No. 4,402,694. "BODY CAVITY ACCESS DEVICE CONTAINING A HORMONE SOURCE" by SR Ash and MP Loeb, September 6, 1983.

U.S. Patent No. 4,387,777. "CALORIE COUNTING METHOD AND APPARATUS" by SR Ash, June 14, 1983.

U.S. Patent No. 4,368,737. "IMPLANTABLE CATHETER" by SR Ash, January 18, 1983.

U.S. Patent No. 4,348,283. "RECIPROCATING DIALYZER HAVING SPACERS" by SR Ash, September 7, 1982.

U.S. Patent No. 4,071,444. "PORTABLE CHEMICAL REACTOR FOR USE AS AN ARTIFICIAL KIDNEY" by SR Ash, PG Wilcox and DP Kessler, January 31, 1978.

Journal Publications, Published Abstracts, Textbook Chapters

Sorbent Based Dialysis Systems – BioLogic-HD System, HemoCleanse-SHD System

Sinclair A, Babbs CF, Griffin DD and Ash SR. Roux-Y intestinal bypass for administration of sorbents in uremia. *Kidney Int Suppl* 13(88):S153-S159, 1978.

Sinclair A, Griffin DD, Voreis and Ash SR. Sorbent binding of urea and creatinine in a Roux-Y intestinal segment. *Clin Nephrol* 11(2):97-104, 1979.

Ash SR, Barile RG, Thornhill JA, Sherman JD, and Wang N-HL. In vivo evaluation of calcium-loaded zeolites and urease for urea removal in hemodialysis. *Trans Am Soc Artif Inter Organs* 26:111-115, 1980.

Wang N-HL, Kessler DP and Ash SR. Mass transfer characteristics of a sorbent-based reciprocating dialyzer. *Chem. Eng. Commun* 5(5):347-365, 1980.

Ash SR, Barile RG, Wilcox PG, Wright DL, Thornhill JA, Dhein CR, Kessler DP, and Wang N-HL. The sorbent suspension reciprocating dialyzer: a device with minimal sorbent saturation. *ASAIO J* 4(1):28-40, 1981.

Barile RG, Wang N-HL, Blake DE, Belcastro PF, Gupta S, Regnier FE, Thornhill JA, Kessler DP, and Ash SR. A reciprocating, single-needle hemodialyzer with bidirectional flow of sorbent suspension. *Artif Organs* 6(3):267-279, 1982.

Badylak S, Ash SR, Thornhill JA, Carr DJ. Doppler ultrasonic detection of particulate release during hemodialysis with cellulose hollow-fiber and sorbent suspension reciprocating dialyzers. *Artif Organs* 8(2):220-223, 1984.

Davidson GW, Ash SR, et al. Assessment of biomaterials as components of a reciprocating dialyser during canine dialysis. *Biomaterials* 5(4):227-233, 1984.

Ash SR, Barile RG, Wilcox PG, Wright DL, Thornhill JA, Dhein CR, Kessler DP and Wang N-HL. The sorbent suspension reciprocating dialyzer: a device with minimal sorbent saturation. *ASAIO J* 4:28-40, 1984.

Winchester JF and Ash SR. Hemoperfusion for uremia: past, present, future. *Kidney Int Suppl* 17:S127-S130, 1985.

Ash RS, Carr DJ, Baker K, Schultz TW and Reynolds LO. Automatic priming, blood flow control, and rinsing during single access hemodialysis. *Trans Am Soc Artif Inter Organs* 31:499-503, 1985.

Ash SR, Carr DJ, and Blake DE. Sorbent chemicals in hemodialysis and medicine. *Proc Materials Research Society on Biomedical Materials* Boston, 1987.

Ash SR, Baker K, Blake DE, Carr DJ, Echard TG, Sweeney KD, Handt AE and Wimberly AL. Clinical trials of the BioLogic-HT - automated single access sorbent-based dialysis. *ASAIO.Trans* 33(3):524-531, 1987.

Ash SR, Blake DE, Carr DJ, Baker K and Echard TG, The BioLogic-HD: hemodialysis simplified. *Proc Intl Symposium Artif Organs* pp. 263-277, 1986.

Koszuta JJ, Carter JM and Ash SR. Effect of ethanol perfusion on creatinine removal in a Roux-Y intestinal segment. *Intl J Artif Organs* 14(7):417-423, 1991.

Ash SR, Carr DJ, Blake DE, Truitt RB. Simpler, safer, more automated equipment for night-time home hemodialysis. *PDI* 19; Suppl 1: S87, 1999.

Ash SR, Carr DJ, Harker KD, Truitt RB, Korkor AB. Simple, safe, single-lumen system for long duration dialysis. *Blood Purif* 18:74, 2000.

Ash SR, Carr DJ, Harker KD, Truitt RB, Korkor AB. Simpler, safer, more-automated equipment for nighttime home hemodialysis. *PDI* 20 (Suppl 1):S101, 2000.

Ash SR, Carr DJ, Harker K, Truitt RB, Korkor A. Every-other night hemodialysis (QOHD) with plate dialyzer as blood pump and single-lumen access. *ASAIO J* 46:223, 2000.

Ash SR, Carr DJ, Karker H, Truitt RB, Korkor A. Every-other night hemodialysis with single-lumen access, plate dialyzer as blood pump, and sorbent column (SHD). *Int J Artif* Organs 32:575, 2000.

Sorbent Suspension Dialysis System; the Biologic-DT® System, HemoTherapies Liver Dialysis Unit™

Liver Failure – Journal Articles

Ash SR. Treatment of acute hepatic failure with encephalopathy: a review. *Int J Artif Organs* 14(4):191-195, 1991.

Ash SR, Blake DE, Carr DJ, Carter C, Howard T, Makowka L. Neurologic improvement of patients with hepatic failure and coma during sorbent suspension dialysis. *ASAIO Trans* 37(3):M332-M334, 1991.

Ash SR, Blake DE, Carr DJ, Carter C, Howard T and Makowka L. Clinical effects of a sorbent suspension dialysis system in treatment of hepatic coma (the BioLogic-DT). *Int J Artif Organs* 15(3):151-161, 1992.

Ash SR, Carr DJ, Blake DE, Rainier JB, Demetriou AA, Rozga J. Effect of sorbent-based dialytic therapy with the Biologic-DT on an experimental model of hepatic failure. *ASAIO J* 39(3):M675-M680, 1993.

Ash SR, Hemodiabsorption in treatment of acute hepatic failure and chronic cirrhosis with ascites. *Artif Organs* 18(5):355-362,1994.

Ash SR, Hemodiabsorption in the treatment of acute hepatic failure. *ASAIO J* 40(1):80-82, 1994.

Wilkinson AH, Ash SR, Nissenson AR. Hemodiabsorption in treatment of hepatic failure. *Journal of Transplant Coordination* 8:43-50, 1998.

Ash SR. Letter to the Editor. *Artif Organs* 22(6):518-519, 1998.

Ash SR. Overview of the treatment of fulminant hepatic failure. 2000 UpToDate, Burton Rose Editor.

Liver Failure - Abstracts

Ash SR, Wilkinson AH, Hughes RD, Williams R. BioLogic-DT System in treatment of acute hepatic coma; results of randomized prospective controlled trials. *American Society for Artif Organs.* 42(2)11, March-April 1996.

Ash SR, Patzer JF, Carr DJ, Blake DE. Push-pull sorbent-based pheresis in treatment of acute hepatic failure with coma (AHF). *Amer. Soc. for Artificial Internal Organs.* 43(2):18, March-April 1997.

Ash S, Wilkinson A, Hughes R, Williams R. BioLogic-DT system in treatment of acute hepatic coma; results of randomized, prospectively controlled trials. *J Hepatology* 25(1):101, 1996.

Mazariegos GV, Ash SR, Patzer JF. Preliminary results: randomized clinical trial of the BioLogic-DT in treatment of acute hepatic failure (AHF) with coma. *Artif Organs* 21(6):529, 1997.

Mazariegos GV, Kramer DK, Linden P, Pinna A, Fung JJ, Ash SR, Patzer JF. Treatment of hepatic failure with advanced encephalopathy using the BioLogic-DT: Preliminary clinical results. *Critical Care Society*, 1998.

Ash SR, Leamon KD, Gingrich CH. Hemodiabsoption (The BioLogic-DT System) in treatment of hepatic failure with encephalopathy: Summary of randomized, prospectively controlled clinical trials. *Hepatology* 28(4, Pt. 2):497A, 1998.

Ash SR, Kuczek T, Foster DE, Blake DE, Gingrich CH. Hemodiabsorption in treatment of hepatic failure: summary of randomized, prospectively controlled clinical trials with the BioLogic-DT System. *ASAIO J* 45:202, 1999. (Slide Presentation ASAIO '99.)

Ash SR, Kuczek T, Foster DE, Blake DE, Gingrich CH, Mankus RA. Hemodiabsorption in treatment of hepatic and hepatorenal failure: summary of randomized, prospectively controlled clinical trial. *J Am Soc Nephrol* 10:628A, 1999.

Ash SR, Kuczek T, Foster DE, Blake DE, Gingrich CH. Hemodiabsorption in treatment of hepato-renal failure: Summary of randomized, prospectively controlled clinical trials. *Hepatology* 30:169A, 1999.

Ash SR, Kuczek T, Foster DE, Blake DE, Gingrich CH. Liver dialysis in treatment of hepatic failure and hepatorenal failure: Summary of randomized, prospectively controlled clinical trials. *Blood Purif* 18:67, 2000.

Ash SR, Kuczek T, Blake DE, Gingrich CH. Liver dialysis in treatment of hepatorenal failure: randomized clinical trials and clinical experience. *ASAIO J* 46:223, 2000.

Ash S, Kuczek T, Foster D, Steczko J, Blake D, Gingrich C. Liver dialysis in treatment of hepatic failure and hepatorenal failure: randomized clinical trials and recent improvements. *Int J Artif* Organs 23:534, 2000.

Ash SR, Kuczek T, Steczko J, Blake DE, Gingrich CH. Randomized clinical trials of liver dialysis in treatment of hepatic failure and hepatorenal failure. *J Am Soc Nephrol* 11:173A, 2000.

Drug Overdose – Journal Articles

Shihab-Eldeen AA, Peck GE, Ash SR, Kaufman GM. Evaluation of the sorbent suspension reciprocating dialyser in the treatment of overdose of paracetamol and phenobarbitone. *J Pharm Pharmacol* 40:381-387, 1988.

Ash SR, Blake DE, Carr DJ. Increasing selectivity of chemical removal from blood by pre-loading charcoal of the BioLogic-DT. *American Filtration Society* 7:329-332, 1993

Ash SR, Blake DE, Carr DJ, Rainier JB, Gingrich CH, Truitt RB. Selective chemical removal from blood by a sorbent suspension dialysis system (Biologic-DT). *American Filtration Society* 7:325-328, 1993.

Ash SR, Levy H, Akmal M, Mankus RA, Sutton JM, Emery DR, Scanlon JC, Blake DE, Carr DJ. Treatment of severe tricyclic antidepressant overdose with extracorporeal sorbent detoxification. *Advances in Renal Replacement Therapy* 9:31-41, 2002.

Ash SR, Caldwell CA, Singer GG, Lowell JA, Howard TK, Rustgi VK. Treatment of acetaminophen-induced hepatitis and fulminant hepatic failure with extracorporeal sorbent-based devices. *Advances in Renal Replacement Therapy* 9:42-53, 2002.

Drug Overdose - Abstracts

Ash SR, Rustgi VK. Recovery of hepatic function following treatment of acetaminophen overdose with the BioLogic-DT. Abstract #348, pg. A-88. Proceeding from Digestive Disease Week. May 1997.

Lowell JA, Caldwell CA, Singer G, Rustgi VK, Ash SR, Wendon JA, Williams R. Treatment of acetaminophen-induced hepatotoxicity and fulminant hepatic failure by the BioLogic-DT® System. *Hepatology* 26:4(2):252A, 1997.

Ash SR, Caldwell CA, Singer GG, Lowell JA, Howard TK, Rustgi VK, Hughes R, Ellis T, Wendon JA, Williams R. Treatment of acetaminophen-induced hepatitis and fulminant hepatic failure by the BioLogic-DT system. *ASAIO J* 45:204, 1999. (Poster presentation at ASAIO `99.)

Mankus RA, Ash SR, Levy H, Akmal M, Blake DE, Carr DJ, Emery DR, Scanlon JC. Treatment of severe tricyclic antidepressant (TCA) overdose using hemodiabsorption by the BioLogic-DT system. *ASAIO J* 45:123, 1999. (Poster presentation at ASAIO `99.)

Ash SR, Levy H, Akmal M, Mankus RA, Sutton JM, Emery DR, Scanlon JC, Blake DE, Carr DJ. Treatment of severe tricyclic antidepressant overdose with the BioLogic-DT System. *J Am Soc Nephrol* 10:628A, 1999.

Ash SR, Caldwell CA, Singer GG, Lowell JA, Howard TK, Rustgi VK. Treatment of acetaminophen-induced hepatitis and fulminant hepatic failure by the BioLogic-DT System. *Hepatology* 30:552A, 1999.

Sorbent Based Pheresis; the BioLogic-DTPF System™

Liver Failure – Journal Articles

Ash SR, Blake DE, Carr DJ, Harker KD. Push-pull sorbent-based pheresis for treatment of acute hepatic failure: The BioLogic-detoxifier/plasma filter System. *ASAIO J* 44(3):129-139, 1998.

Ash SR, Knab WR, Blake DE, Carr DJ, Steczko J, Harker KD, Levy H. Push-pull sorbent-based pheresis and hemodiabsorption in treatment of hepatic failure: preliminary results of a clinical trial with the BioLogic-DTPF System. *Therapeutic Apheresis* 4:218-228, 2000.

Steczko J, Bax KC, Ash SR. Effect of hemodiabsorption and sorbent-based pheresis on amino acid levels in hepatic failure. *Int J Artificial Organs* 23:375-388, 2000.

Ash SR. Powdered Sorbent liver dialysis and pheresis in treatment of hepatic failure. Therapeutic Apheresis 5(5):404-416, 2001.

Ash SR. Extracorporeal blood detoxification by sorbents in treatment of hepatic encephalopathy. *Advances in Renal Replacement Therapy* 9:3-18, 2002.

Liver Failure - Abstracts

Ash SR, Carr DJ, Blake DE, Harker KD. Push-pull sorbent-suspension pheresis for treatment of acute hepatic failure: the BioLogic-DTPF. *ASAIO J* 42(2):11, 1996.

Ash SR, Knab WR, Steczko J, Carr DJ, Blake DE. Hepatic failure treatment by powdered sorbent pheresis - the BioLogic-DTPF System. *ASAIO J* 44(2):92A, 1998.

Ash SR, Knab WR, Blake DE, Carr DJ, Harker DK, Levy H. The BioLogic-DTPF System in treatment of fulminant hepatic failure: preliminary results of a clinical trial. *Hepatology* 28(4, Pt. 2):496A, 1998.

Ash SR, Blake DE, Carr DJ, Harker KD, Levy H. Push-pull sorbent-based pheresis (BioLogic-DTPF) in treatment of hepatic failure: preliminary results of a clinical trial. *ASAIO J* 45:203, 1999. (Poster presentation at ASAIO '99).

Steczko J, Ash SR, Bax KC, Blake DE. Amino acid profiles during hepatic failure during sorbent-based dialysis and sorbent-based pheresis treatment. Presented at 10th International Symposium on Hepatic Encephalopathy and Nitrogen Metabolism, Turkey, 1999.

Ash SR, Blake DE, Carr DJ, Harker KD, Levy H. Push-pull sorbent-based pheresis (BioLogic-DTPF System) in treatment of hepatic failure: preliminary results of a clinical trial. Presented at for 10th International Symposium on Hepatic Encephalopathy and Nitrogen Metabolism, Turkey, 1999.

Ash SR, Blake DE, Carr DJ, Harker KD, Levy H. Push-pull sorbent-based pheresis (BioLogic-DTPF System) in treatment of hepatic failure: preliminary results of a clinical trial. *Therapeutic Apheresis* 3(2):113, 1999.

Ash SR, Bax KC, Steczko J. Changes in plasma amino acid levels in hepatic failure patients during sorbent-based dialysis and sorbent-based pheresis treatment. *Hepatology* 30:675A, 1999.

Sepsis – Journal Articles

Levy H, Ash SR, Knab WR, Steczko J, Carr DJ, Blake DE. Systemic inflammatory response syndrome (SIRS) treatment by powdered sorbent pheresis: the BioLogic-Detoxification Plasma Filtration System. *ASAIO J* 44(5):M659-M665, 1998.

Steczko J, Ash SR, Blake DE, Carr DJ, Bosley RH. Cytokines and endotoxin removal by sorbents and its application in push-pull sorbent-based pheresis: The BioLogic-DTPF System. *Artif Organs* 23:310-318, 1999.

Ash SR, Steczko J, Levy H, Blake DE, Carr DJ. Treatment of systemic inflammatory response syndrome by push-pull powdered sorbent pheresis: A Phase 1 clinical trial. Therapeutic Apheresis 5 (6):497-505, 2001.

Peter AT, Ash SR, Steczko J, Turek JJ, Blake DE, Carr DJ, Knab WR, Bosley RH. Push-pull sorbent-based pheresis treatment in an experimental canine endotoxemia model: preliminary report. *Intern J Artif Organs* 22:177-188, 1999.

Sepsis - Abstracts

Steczko J, Ash SR, Carr DJ, Blake DE. Cytokine removal from plasma by push-pull sorbent-based pheresis (the BioLogic-DTPF System). *ASAIO J* 43(2):82, 1997.

Ash SR, Steczko J, Carr DJ, Blake DE. Cytokine, endotoxin, and bilirubin removal from plasma by push-pull sorbent-based pheresis (the BioLogic DTPF System). *Artif Organs* 21(6):499, 1997.

Ash SR, Steczko J, Carr DJ, Blake DE. Cytokine and bilirubin removal in acute hepatic failure by push-pull sorbent-based pheresis (the BioLogic-DTPF System). *Hepatology* 26(4p2):475A, 1997.

Steczko J, Ash SR, Levy H, Carr DJ, Blake DE. Cytokine removal from plasma of patients with sepsis by the BioLogic-DTPF System. *Hepatology* 26:4(2):604A, 1997.

Levy H, Ash SR, Knab WR, Steczko J, Carr DJ, Blake DE. Systemic inflammatory response syndrome (SIRS) treatment by powdered sorbent pheresis: the BioLogic-DTPF System. *ASAIO J* 44(2):81A, 1998.

Levy H, Ash SR, Steczko J, Carr DJ. Cytokine removal from plasma of patients with SIRS by the BioLogic-DTPF. Poster presentation at 18th International Symposium. *Critical Care* 2(1), March 1998.

Ash SR, Levy H, Mankus RA, Knab WR, Steczko J, Carr DJ, Blake DE. Treatment of systemic inflammatory response syndrome (SIRS) by powdered sorbent pheresis: the BioLogic-DTPF System. *J Am Soc Nephrol* 9:471A, 1998.

Levy H, Ash SR, Knab WR, Steczko J, Carr DJ, Blake DE. Treatment of systemic inflammatory response syndrome (SIRS) by powdered sorbent pheresis: the BioLogic-DTPF System. *Hepatology* 28(4, Pt.2):225A, 1998.

Ash SR, Levy H, Steczko J, Carr DJ, Blake DE. Push-pull sorbent-based pheresis (BioLogic-DTPF System) in treatment of systemic inflammatory response syndrome (SIRS). *Therapeutic Apheresis* 3(1):113, 1999.

Whole Body Hyperthermia; BioLogic-HT System, ThermoChem System

Hyperthermia – Journal Articles

Steinhart CR, Ash SR, Gingrich C, Sapir D, Keeling GN, Yatvin MB. Effect of whole body hyperthermia on AIDS patients with Kaposi's sarcoma: a pilot study. *J Acquired Deficiency Syndromes and Human Retrovirology* 11(3):271-281, 1996.

Ash SR, Steinhart CR, Curfman MF, et al. Extracorporeal whole body hyperthermia treatments for HIV infection and AIDS. *ASAIO J* 43(5):M830-M838, 1997.

Hyperthermia Abstracts

Ash SR, Steinhart CR, Curfman MF, Gingrich CH, Sapir DA, Yatvin MB. Whole body hyperthermia treatments for AIDS; a randomized, controlled trial. *American Society for Artif Organs* 42(2):98, 1996.

Yatvin MB, Shenoy M, Li W, Steinhart C, Ash SR, Gingrich C, Sapir D, Keeling, G. Whole-body hyperthermia to treat HIV-infection. 5th Annual AIDS Day Conference, Munich, Germany, January 1996.

Ash SR, Steinhart CR, Curfman MF, Gingrich CH, Sapir DA, Yatvin MB. Whole body hyperthermia treatments for AIDS; combination with protease inhibitor therapy. *Amer. Soc. for Artificial Internal Organs.* 43(2):34, 1997.

Ash S, Steinhart C, Curfman M, Gingrich C, Sapir D, Yatvin M. Whole body hyperthermia treatment (WBHT) for AIDS: a randomized, controlled study in patients with drug treatment failure. *Artif Organs* 21(6):567, 1997.

Peritoneal Dialysis and Access: T-Fluted Catheter, Ash Advantage

PD - Articles

Ash SR and Manfredi F. Directed biopsy using a small endoscope: thoracoscopy and peritoneoscopy simplified. *New Eng J Med* 291(26):1398-1399, 1974.

Thornhill JA, Ash SR, Dhein CR, Polzin DJ and Osborne CS. Peritoneal dialysis with the Purdue Column Disc Catheter. *The Minnesota Veterinarian* 20(2):27-33, 1980.

Ash SR, Johnson H, Hartman J, Granger J, Koszuta J, Sell L, Dhein C, Blevins W, and Thornhill JA. The column disc peritoneal catheter: a peritoneal access device with improved drainage. *ASAIO J.* 2:109-115, 1980.

Thornhill JA, Dhein CR, Johnson H and Ash SR. Drainage characteristics of the column disc catheter: a new chronic peritoneal access catheter. *Proc. Clin Dial Transplant Forum* 10:119-125, 1980.

Dhein CR, Thornhill JA, Chiosi C, Ash SR. Protein and bacterial rejecting filters for peritoneal dialysis. *Kidney Int* 19(1):145, 1981.

Ash SR, Wolf GC and Block R. Placement of the Tenckhoff peritoneal dialysis catheter under peritoneoscopic visualization. *Dialysis & Transplantation* 10(5):383-386, 1981.

Ash SR. Outflow volume measurements during CAPD: a simplified method. *Contemporary Dialysis* 2(1):38, 1981.

Ash SR, Wimberly AL and Mertz SL. Peritoneal dialysis for acute and chronic renal failure: an update. *Hosp Practice* 18(1):179-210, 1983.

Ash SR, Handt A and Block R. Peritoneoscopic placement of the Tenckhoff catheter - further clinical experience. *PD Bulletin* 3(1):8-12, 1983.

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